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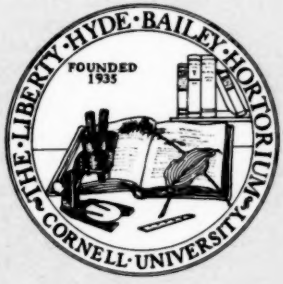
Observing the One Hundredth Birthday Anniversary of Liberty Hyde Bailey



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Notes and short scientific papers relating to the systematics of cultivated plants, and to their history in cultivation or to the literature pertaining to such topics, will be considered for publication to the extent that the limited space of the publication permits. Line illustrations to accompany such papers are invited. Authors of more than two pages of print will receive in recompense 15 copies of the issue in which their contribution appears. No proof will be submitted to the author and copy is considered in final form as received. Extracted reprints without change in pagination will be provided at cost [$2.00 per page per 100 copies, which is the minimum number which should be ordered].

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Liberty Hyde Bailey's Legacy to Gardeners[1]

George H. M. Lawrence

During his nearly eighty years of incessant activity Liberty Hyde Bailey was a prodigious producer. This is the more remarkable because he excelled in so many areas. In every direction where he applied his talents he made a mark - how lasting were those marks, we are learning today. The question has been asked, where was that mark the greatest, when was it the most significant, which one will be the longest-lived?

A scientist assembles facts. He analyzes them. And from them he reaches conclusions. The answer to this question about Bailey's greatest mark is not found by such deductions. Rather, it is to be found by more subjective inductions.

You have seen here today the shelves of sixty-three different books Liberty Hyde Bailey wrote, together with the many editions that some of them went through. You have seen the encyclopedias he edited, the garden dictionaries he compiled. We could have put on display copies of the nearly 1300 papers he published in the world's periodical literature. You have heard of his accomplishments in behalf of rural populations, of the amateur gardener, and of the horticulturist. You will hear of more, if other, areas. His is indeed an impressive record. But none of these marks nor all of them, in my opinion, represent the contribution that I hold to be Liberty Hyde Bailey's greatest gift to gardeners.

In 1939 he wrote a tribute that had been close to his heart for nearly seventy years, a debt of acknowledgment he considered to be long overdue. In it he said of his subject, Mrs. Lucy Millington, a botanist who had moved into the South Haven community of his boyhood in the spring of 1876, "She told me the names of my plants and pronounced the strange words as if they were her common speech ... she led me through the difficult parts of Gray's 'Field, Forest, and Garden Botany.'" Telling of when she and her family moved away the next year, Bailey recounted, "She left me a precious momento, however, which I still cherish. It is a small botany-case, painted bright red when she gave it to me and which I

[1] An address delivered at Cornell University, March 14, 1958, on the occasion of the celebration of the Liberty Hyde Bailey Centennial.

yet keep in that color .... This collecting-case I carried through my college years and long thereafter." Here, before us, is that case. To Lucy Millington I will make further reference, later.

Nine years later, in 1885, found Bailey to be a Professor of Horticulture at Michigan Agricultural College, and in December of that year he delivered - on invitation - a lecture before the Massachusetts State Board of Agriculture, at Framingham, titled "The Garden Fence ... or what we don't know about horticulture." "This fence," he said, "... stands between theory and practice ...." Speaking of the gulf between the theory of botany and the practice of horticulture, Bailey said, "Nothing that is really good or true in theory can ever fail in practice. If failure occurs, it proves that the theory is false or the practice incomplete."

He pointed out that there was a fence about every garden which no botanist would climb. "If we need one thing more than another," he told that audience, "it is that the botanist shall climb the garden fence and include within the realm of his science all the plants which we till."

Speaking of the botanist, he exclaimed, "The classification and method of naming [plants] are such that the diligent botanist can hold in his mind the names and kinship of thousands of plants .... There is no system of arrangement so complete ... so thorough ... as the systems of classification and nomenclature which we apply to wild plants and animals. On the other hand there is no system more bungling, none more thoroughly haphazard than that which we apply to the plants of the garden. Is there not some way to get our classification and nomenclature over the garden fence? If the subject is beset with difficulty, so much the more do we need systems, and so much greater will be his honor who constructs it. I hope to see the day when the gardener can botanize intelligently in his garden. I hope to see a handbook which will aid us in the determination of garden varieties." This was Bailey speaking, Bailey a young man twenty-seven years old, but a man who in that speech lit a torch whose light burns brighter today than he then could have contemplated.

This botany that Bailey spoke of was nothing dry, dull, or deadly. "Many people," he said, "do not know what botany is, they associate it with the school-girl accomplishment, which aims to chase down a few plants to their Latin names, and to press them in a little book, which is sacrilegiously styled an herbarium. This work bears no more relation to botany than does a [political] party's platform to party practice. Botany teaches, not only what a plant is, but what it does, and how it does it."

A decade later, in 1896, Bailey laid plans for a great monumental work. It was completed in 1900, when the Macmillan Com-

pany published his Cyclopedia of American Horticulture, the first of its kind in any language having keys to help identify garden plants. In 1914 there appeared the first volumes of a still more modern cyclopedia, completely rewritten from the earlier one and completed in 1917. That work, Bailey's Standard Cyclopedia of Horticulture, now forty years old, is still in print and has no serious competitor. In 1924 Bailey finished and published a one-volume Manual of Cultivated Plants, of which a new edition, completely rewritten, was published in 1949. These were in partial answer to his hope of 1885 for "a handbook which will aid us in the determination of garden varieties." For Bailey the botanist there was no garden fence. But, great as these milestones were, his greatest gift to gardeners was yet to be made known.

This gift was conceived by Bailey in the days of Lucy Millington, and we have tangible evidence that it began to take form by 1880. It grew over the years, until by 1935 it had reached such proportions that it was too much for one man and his devoted daughter to develop further, for in December of 1935 Liberty Hyde Bailey told some department heads and others of this College of Agriculture,

"It has long been my desire to found an institution to represent the cultivated flora of the world .... I have wished it to be a unit of record and research .... The greater part of the 25,000 kinds of plants in cultivation [in this country] are imperfectly known as to identification. The names are largely taken for granted, and they pass from dealer to dealer, from catalogue to catalogue, from nurseryman to purchaser without discriminating check. There is no recognized place in the world for the identification of all cultivated plants as such, with facilities for investigation, covering both herbaceous and woody subjects, and relating the knowledge to the needs of the cultivator and the investigator.

"Accurate systematic knowledge of the cultivated flora," he went on, "should constitute a basic consideration ... of horticulture, genetics and plant breeding, physiology, pathology, agronomy .... It is a major requirement in the development of institutions of learning in agriculture.

"With this institution," he said, "I hope we foresee the beginning of an epoch in horticulture. It is the one departure in that field now most needed.

"This botany of cultivated plants cannot be understood without a knowledge of wild plants. The systematic values and the species concepts are the same in both fields. The workers must be trained in ... the subject as a whole, [just] as an agricultural chemist must first of all be a chemist. The work must be strictly scientific.

"It is apparent," he continued, "that the literary output of [this] active [institution] must be a new type of publication. Old patterns

in systematic botany will not suffice. The clientele is largely yet to be developed. [The] publication must be scientific and thorough, yet carry human interest."

In conclusion, he told them, "The foregoing statements mean nothing less than that a new type of scientific institution is beginning to take form. The enterprise requires a new name. The word hortorium is proposed." Hortorium comes from the Latin hortus, a garden; an hortorium is a place for the botanical study of things of the garden.

With this announcement Liberty Hyde Bailey gave to Cornell University the institution whose name you know so well. His gift was of all that he had brought together over the years since Lucy Millington gave him this small red collecting case: specimens of plants he had collected himself, specimens he had bought - 125,000 of them, assembled from all parts of the world, the largest private collection then in this country; books, books about plants, botanical and horticultural - nearly 3,000 of them, purchased because they were of necessity his working tools, filled with facts about wild plants and cultivated plants of every land, and written in many languages; buildings to house these collections, work rooms in which to prepare and study them - all converted from stable, carriage house, hay loft, and greenhouse, conveniently attached to his home located midway between where we are and the center of the city below us; and land adjoining where many hundreds of kinds of plants were grown each year for study. This was the physical plant of the Hortorium he gave, a plant which was later outgrown; in 1952 the work was somewhat reluctantly transferred to the College of Agriculture.

But what of its plan, its scope, its future? How fortunate it is that Liberty Hyde Bailey gave this new institution, truly a newborn infant scarcely clothed and poorly nurtured, gave it while he was yet so full of vigor that at the age of 77 Cornell's Trustees would appoint him - a former Dean who had retired twenty-two years earlier - director and in charge of this institution's future. For seventeen years thereafter he charted its course, kept the helm when the going was rough, signed on its crew, and saw to it that the goods were delivered. During this crucial period of development, when truly there were dangers of its being swamped, dangers of its being crewless, it was Bailey whose voice was heard and was listened to. None other could have been so effective. It was during this period, too, that he demonstrated the place, the need, and the role of at least one institution where the gardener might come to learn of many things about the kinds of plants he grew or sought to grow.

Liberty Hyde Bailey had founded an institution which he expected would be more than a repository for the documentation of plants

of the garden. He founded an institution without a fence, an institution whose staff of botanists would devote themselves to the problems of identifying, naming, and classifying plants of the garden for the gain and greater knowledge of all concerned.

Specifically, he expected the Hortorium would be the one place in this great country that would know the inventory of what plants were in cultivation, where they were to be had, where they came from, and, by means of its vouchers of those plants, would have the all-important record, the documentation, the evidence, for its findings and reports.

He expected the Hortorium to maintain close liaison with the growers - the nurserymen, the florists, the seedsmen - and the great collections of public and private gardens. One of my early tasks - and privileges - when I first came to the Bailey Hortorium was to go to such establishments as Henry Kohankie's nursery in Ohio, Rex Pearce's in New Jersey, J. Horace McFarland's Breeze Hill Garden in Harrisburg, the Montreal Botanic Garden, the Dominion Arboretum at Ottawa, and others, and there at various months of the growing season make blanket collections of all the kinds of plants they had. It provided a record of what they were growing or offering. During winter months those collections were worked over, the identity and name of each specimen were checked, verified or corrected, and reports were sent back to the source. Dr. Bailey held this to be a vital function of the Hortorium. He held that through our study of these blanket collections we would keep in touch with the flow of plants to your gardens. We would thus better know what you were getting under a particular name. It weighs heavily on me at this time that we do not now have a staff member at the Hortorium to assign to this important phase of our work. It must be resumed, and at earliest opportunity.

Dr. Bailey expected the Hortorium to keep the gardening public of this country advised, not only of what plants were available, but of their correct names and how to know what one had. To do this requires a highly trained staff and the work is painstakingly slow. It is being done, and through several channels. In 1949 there was published a wholly new edition of Bailey's Manual of Cultivated Plants - a one-volume handbook designed to help the plantsman find the name of any commonly grown plant of any part of this country. Dr. Munz, here today from California, had a large part in its preparation. For several years now we have been working to produce a new edition of Hortus, a one-volume garden dictionary, which includes the up-to-date names and brief descriptions of more than 33,000 kinds of plants currently grown in America. When it is completed we will embark - provided we have adequate support - on our largest and most awesome project, preparation of a new Bailey's Cyclopedia of Horticulture.

Dr. Bailey expected the Hortorium to have a new type of periodical which would "be scientific and thorough, yet carry human interest" - a periodical that would interpret daily botanical findings at the Hortorium for use by the gardener. It is a difficult order, but five years ago today the first copy of the first number was placed in Liberty Hyde Bailey's hands as he sat in a wheel chair in his home. We had talked about it before, about its content, and about how it could be produced - on a shoestring. But only when he saw that first copy did he know its name was Baileya. He was moved momentarily beyond words, and his next comment was, "I do not deserve it." Our concern since then has been to strive to make it deserve his name. For this year of 1958 we propose to make Baileya a special volume, augmenting its regular content by publishing in each of its four numbers some of the papers given at today's Centennial celebration. The first number, replete with new cover and much enlarged over previous issues, will be distributed today.

Liberty Hyde Bailey expected the Hortorium to develop, to grow, and thereby to increase its value, its output, its contributions to you. At the same time Dr. Bailey was adamant in his insistence that these expectations never be reached at the expense of other plant science activities here at Cornell. This College, of which the Hortorium is a part, is a state college of agriculture. Legislators and the public are prone to think of agriculture only in terms of ham and eggs, of bread and milk - the all-essential bread basket material. If you have studied the place mats before you, you will note that this thinking, this exclusion of the rightful place of ornamental plants in our economy, does not stop there.

This points, in part, to a lack of both knowledge and appreciation of the economies involved in this state, and throughout this country, in the dollar-value importance of ornamental plants. It points, in part, also, to the universal practice - when allocating public funds - of greasing the wheel that squeaks the loudest. The 1950 federal census made an approach in the analysis of these values of ornamentals. It is to be hoped that that for 1960 will do more in this direction. I mention these matters because the work of the L. H. Bailey Hortorium - concerned as it is with plants from Madagascar, Honduras, or Sumatra - is, at the same time, very germane to the interests of every home owner, plantsman, and garden lover, whether he live in this or in any other state of this Union. Its scope is that of cultivated plants of this country - not of Ithaca, not of New York State, not even of temperate North America only. It is important that our work take us wherever these plants grow, for, in some difficult cases, there we must go to study these plants. An admonition of Liberty Hyde Bailey's, one so many times repeated, must also be remembered - that to know

the cultivated plant, one must first know its counterpart or antecedant in the wild.

Because the L. H. Bailey Hortorium is unique, because, amazing as it is, no other institution in this country devotes itself to the same objectives in behalf of the plantsman, there is a responsibility on the Hortorium's administration to ensure that this institution shall long continue to radiate light and thereby serve as a beacon for all concerned with cultivated plants. I submit to you that, properly administered and adequately supported, the L. H. Bailey Hortorium is truly Liberty Hyde Bailey's greatest gift to gardeners.

"Maples Cultivated in the United States and Canada," by Brian O. Mulligan. 56 pages, with 8 pages of photographs. Soft cover. American Association of Botanical Gardens and Arboretums, August 1958. $2.00 (10-24 copies, $1.60 each; 25-100 copies, $1.20 each).

This is a record of the maples cultivated in North America, based largely on their occurrence in 25 of the arboreta and botanical gardens of the United States and Canada. The heart of the work is a check list of such maples, arranged alphabetically by scientific name and including common names, information as to their region of origin, synonyms, dates of discovery botanically and of introduction to cultivation, known varieties and cultivars, and the principal arboreta and botanical gardens where these species, varieties, and cultivars are now being grown.

Preceding and supplementary to this check list are brief discussions or lists pertaining to: geographical distribution of maples; their botanical classification; species and varieties reported growing at only one of the participating institutions or not known to be growing now at any of them, though worthy of introduction; principal cultivars and their associated species; hybrid maples; chromosome numbers in the maples; maples suitable for planting as large shade trees, as smaller ornamental trees, and for fall color; and propagation. Two bibliographies are included, a general one and a short one relating to propagation.

Since it is possible that additional species, varieties, or cultivars are in cultivation elsewhere in America outside the institutions covered by this checklist, it is not yet really definitive, and the author is desirous of receiving information about such plants, wherever they exist. The present list, however, will be of great interest to nurserymen and all others especially concerned with our cultivated woody plant materials, providing as it does a sort of inventory of most, if possibly not quite all, of the maple taxa represented in a living state on this continent.

Copies of this paper are available from the Association's secretary, Mr. Carl W. Fenninger, The John J. Tyler Arboretum, P. O. Box 216, Lima, Delaware Co., Pennsylvania.

W. J. D.

Two Recently Described Peperomias

T. G. Yuncker
De Pauw University
Greencastle, Indiana

The genus Peperomia of the family Piperaceae contains hundreds of different species which occur in warm regions throughout the world. They are especially numerous in the Western Hemisphere, where they are to be found growing naturally from Mexico southward through Central America and South America as far south as Chile and Argentina, and in the West Indies. A few species occur in southern Florida.

A small number have long been popular as succulent ornamentals suitable for greenhouse and home cultivation. The different species show a wide range in their growth characteristics, appearance of foliage and other parts which are the basis of their attractiveness. None is grown because of its flowers, which are small and insignificant though the rat-tail-like inflorescences are unique and not unattractive. Their culture is comparatively easy and they are disease-free and quite hardy if given reasonable care.

An increasing interest in the cultivation of peperomias has developed both in this country and abroad during the past few years, with many different kinds now being offered by the trade. Some of the kinds found on the market appear to be nondescripts with no proper botanical name ever having been applied to them. The classification of peperomias is difficult. In some cases, the country of origin is unknown, a situation which makes botanical identification still more difficult inasmuch as the keys by means of which identification may be possible are usually limited in their geographical range.

Two species which, because of their beauty, have recently become very popular, both in Europe and in America, are those described and named below. A careful search of the literature failed to reveal any evidence that either had been properly christened with a legitimate botanical name, nor is the country of origin of either known with certainty. Because of the interest which has developed in these two plants, the author recently described and named them in Kew Bulletin. Since it is possible that that publication may not readily be available to some who are interested in

these plants, the descriptions together with their botanical names are repeated here:

Peperomia caperata Yuncker, Kew Bulletin 1957: 421, 1958.

A small succulent essentially glabrous herb with short fleshy stems up to 3-4 mm. in diameter and 3 cm. or more high, simple or branching from the base. Leaves alternate or appearing clustered because of scarcely elongated internodes, the blade ovate or round-ovate, the apex bluntly pointed, the base rounded or truncate, peltate within 5 mm. from the margin, or slightly to deeply cordate and narrowly to scarcely peltate, 5-7-palmately nerved, the nerves branched upward, with inconspicuous anastomosing nervules, commonly 1.5-2.8 cm. wide and 2-3.5 cm. long, shining vivid dark green and strongly plicate-bullate above with the bullae minutely hispidulous, paler and glabrous beneath; petioles slender, up to 7 cm. or more long, green flecked with minute red spots, slightly ridged above by the decurrent nerves, dilated and clasping at the base. Spikes from the upper leaf axils, numerous, the flowering part white, mostly 4-6 cm. long, loosely flowered, the peduncle up to 10 cm. or more long, rose-red flecked with deeper red, the bracts rounded-peltate with somewhat irregular margin, glandular-dotted, the stamens 2, lateral, the ovary obovoid-subturbinate with large, essentially apical, sometimes bifid, puberulent stigma, the drupe globose-obovoid.

Fig. 34. Peperomia caperata.

The country of origin unknown. Type in Herb. Kew., taken from a plant cultivated by Mr. Maurice Mason, Talbot Manor, Kings Lynn, November 27, 1956.

This is a very attractive species with its vivid green, strongly plicate-bullate leaves, white spikes and red petioles and peduncles. The leaves spread to form a dome up to 9 cm. high and 13 cm. in diameter above which rise the numerous spikes. It has entered the trade extensively both in Europe and in America where it has become quite popular as a cultivated ornamental house plant under the name of Peperomia caperata. It is not known who gave the plant this very appropriate Latin epithet, which means "wrinkled." It has been thought best to retain and legitimize this name, which has not been previously used in the genus, and also because of its present wide-spread accepted use horticulturally. This species is most closely allied with those included in the subgenus Tildenia Miquel.

Peperomia griseo-argentea Yuncker, Kew Bulletin 1957: 421, 1958.

A comparatively small glabrous succulent herb, the stem 4-5 mm. in diameter and 2-4 cm. high, the internodes very short. Leaves alternate, the blade round-ovate (2.5-) 4-6 cm. wide and up to 7 cm. long, the apex rounded or slightly pointed, the base rounded-cordate, peltate within 1 cm. of the margin, some leaves very narrowly so, the lobes connivent or more commonly slightly

Fig. 35. Peperomia griseo-argentea.

overlapping, glossy and gray or silvery green above with the areas along the depressed nerves slightly dark-purplish, paler and dull beneath, palmately 9-nerved, the nerves branched upward, with fine obscure anastomosing nervules, sometimes plicate and moderately to strongly bullate; petiole 3-5 or up to 9 cm. or more long, finely ridged above by the decurrent nerves, flecked with short red lines, flattened and widened at the base. Spikes axillary, the flowering part 4 mm. in diameter and 5-10 or 11 cm. long, rather closely flowered, the peduncle at maturity up to 12-14 cm. long, flecked with short red lines, the bracts round-peltate, glandular-dotted, the stamens 2, lateral, the ovary obovoid-subturbinate, somewhat angular, the stigma fleshy, apical, commonly bifid, papillate.

The country of origin unknown. Type from a cultivated specimen, in Herb. Kew., 1956, said to have been received from the shores of the Mediterranean. A plant of the same species, which flowered at Kew in 1936, was brought by Mr. C. H. Lankester from Teneriffe.

This is an attractive plant characterized by its rounded, cordate, peltate, often bullate, shining and greyish or silvery green leaves. It has gained popularity as a pot herb both in Europe and in America where it is listed under a number of names none of which is believed to be legitimate. This species appears to be most closely allied with those included under the subgenus Tildenia Miquel.

IRIS, Series OREGONAE, Stat. Nov.

The subsection Oregonae of section Apogon of the genus Iris was erected by Clarkson (1958) to provide for the anomalous I. tenuis. The need for such disposition has been generally accepted, since I. tenuis differs cytologically and morphologically from the other Pacific coast irises (Clarkson 1958, Lenz 1958) and is isolated geographically. However, Lawrence (1953) pointed out that Apogon as a sectional name is invalid and cannot be used but is valid as a subsectional name as used by Bentham. Lawrence accepted Apogon as a subsection of section Spathula and reduced the subsection Californicae to the status of series.

In order to equate the Oregonae with the Californicae it is therefore necessary to change that monospecific taxon from the category of subsection to that of series:

Iris series Oregonae (Clarkson) Clarkson, Stat. Nov.

Iris subsect. Oregonae Clarkson in Madroño Vol. 4, No. 7 (1958).

Quentin D. Clarkson
Portland State College
Portland, Oregon

The Status of Caragana Boisii[1]

Raymond J. Moore[2]
Department of Agriculture
Ottawa, Canada

During the past ten years an effort has been made at the Dominion Arboretum to collect as many species of Caragana as possible for a cytotaxonomic study of the genus. Among the species commonly grown in botanic gardens is Caragana Boisii Schneider. This species is obviously closely related to the common Siberian pea tree (C. arborescens Lamarck) and difficulty is frequently experienced in deciding whether individuals are to be classed in one or the other species. This problem has been mentioned by Bean who, writing in Great Britain (1), stated that C. Boisii is "scarcely specifically distinct from C. arborescens, differing chiefly in the longer teeth of the calyx and in the downy ovary and young fruit. The alleged greater persistence of the leaves is not very apparent in this country."

Observations of the variability that commonly occurs within the species C. arborescens and of the variability of populations grown from seed received as C. Boisii has led the present author to agree with Bean that C. Boisii is not specifically distinct from C. arborescens.

As is well known, C. arborescens is a species of wide distribution in Siberia south of 60°N., between 75° and 105°E., and also in Mongolia and central Asia in the south. As may be expected in a species occupying an area of such size and environmental diversity, great morphological variation exists. The plants studied here were grown from seed that had passed through cultivation for many years and they probably do not show phenotypes characteristic of the wild populations. It may be taken as highly probable that new combinations of characters have arisen in botanic gardens through cross-pollination between forms from originally separate geographic sources. Segregation may occasionally produce individuals similar to the original ancestral plants.

During this study, seed or plants of C. arborescens have been received from approximately 35 botanic gardens, mostly in Europe, and, in addition, seed was received from 8 sources under the name C. Boisii. Populations of 6 to 12 plants have been grown in the nursery for about 5 years and the chromosome number of most of these bushes has been determined. Observations have been made

[1] Contribution No. 1672 from the Botany and Plant Pathology Division, Science Service, Canada Department of Agriculture, Ottawa, Ontario.

[2] Botanist (Cytogenetics).

of the variability within and between populations from the different seed sources. Specimens have been preserved in the herbarium of the Canada Department of Agriculture, Ottawa (DAO).

The chromosome number 2n = 16 was determined for all plants of C. arborescens Lamarck, C. arborescens f. Lorbergii Koehne and several selections of C. arborescens found in nurseries and also for all plants received as C. Boisii. No differences in the morphology of the chromosomes of these various plants could be recognized.

Caragana arborescens is a tall shrub, to 7 meters in height, in habit usually erect, the branches ascending, but much-branched spreading forms of lesser height are common. The leaf is 5-9 cm. in length and consists of 6-12 pairs of leaflets 4-15 mm. wide, 10-25 mm. long. Leaflets vary greatly in shape from obovate to elliptic-oblong; forms with a distinctly cuneate base occur. The leaflets are usually thin in texture but plants with thick, leathery leaflets with conspicuous veins, reminiscent of C. microphylla Lamarck are not rare. The flowers are yellow, 1.5-2 cm. long, borne in fascicles of 1-4 on stalks (pedicel and peduncle) 2-5 cm. in length. The calyx has short teeth and is about as long as broad. The leaf stipule varies from a small membranous structure 1-2 mm. long to a thick woody spine 1 cm. in length. Plants studied at this time showed variation in these characters in seemingly every possible combination.

Seed was received as C. Boisii from the Royal Botanic Garden, Kew; Royal Botanic Garden, Edinburgh; Botanic Garden, Göteborg; "Cantonspark," Baarn, Netherlands; and from the Arboretum des Barres, Nogent-sur-Vernisson, France. It was in the last-named arboretum that the species C. Boisii was grown and described.

Populations raised from these seed lots were, without exception, not uniform and showed variation in many of the characters listed above. Plants which fitted the type description of C. Boisii were rarely found; plants which approached this entity in some, but not all, characters could be readily selected. It was necessary, therefore, to class most plants raised from these seed lots as C. arborescens.

History of the species

This taxon was described by Bois (5) in 1904 as C. microphylla Lamarck var. crasse aculeata, from a bush grown in the botanic garden of Vilmorin (Arboretum des Barres, Nogent-sur-Vernisson, France). The bush was grown from seed (no. 970) collected in northern Asia. According to Komarov (2), the seed was collected in the eastern part of Szechwan Province, China. It was sown in 1895 at the Arboretum des Barres and flowered 3 years later. Bois's variety was distinguished by the presence of strong spines (lignified stipules) and by its more abundant, more glabrous and

persistent foliage and greater vigor. The author's illustration shows a much-branched, spreading shrub, not so tall as the more common plants of C. arborescens.

Schneider considered Bois's variety to be more closely related to C. arborescens than to C. microphylla and raised it to specific rank as C. Boisii. Schneider explained that he had not taken up Bois's varietal name crasse-aculeata because it was not characteristic and was awkward, action that he considered was in accord with the Vienna Rules of nomenclature. Under the present rules, of course, it is not permissible to reject an epithet for such reasons (Article 26). However, since it is a rule that an epithet does not have priority outside its own rank, Schneider, in raising the taxon to the rank of species, was not constrained in any case to retain an epithet it had been given in the rank of variety.

Schneider describes C. Boisii as reaching 2.5 m. in height, the leaves 5-9 cm. long, leaflets when young with silky hairs on the veins, on both sides, or only below, the upper surface eventually becoming glabrous, leaflets rather broadly obovate, to 18 × 12 mm. in size. Schneider's figure shows 6 pairs of leaflets. The stipules are about 1 cm. long, reddish brown. Flowers are about 2 cm. long, borne singly on a stalk of the same length, calyx 1 cm., almost glabrous but with matted-hairy teeth which are rather longer than in C. arborescens.

Komarov points out that C. Boisii is easily distinguished by its flat elongate pod and hardened flattened stipules, about 1 cm. in length. The leaflets are almost white below.

It will be readily recognized that these descriptions easily overlap the range of variability commonly seen in C. arborescens with regard to leaf size, leaflet number, size, shape and texture. The most definite character distinguishing C. Boisii appears to be the presence of long thick stipules. Stipular spines are seen on all plants of C. arborescens; they vary greatly in size and texture - from soft, membranous structures 2 mm. long to conspicuous woody spines 10 mm. in length. Reddish pigmentation is frequently seen in young stems and stipules.

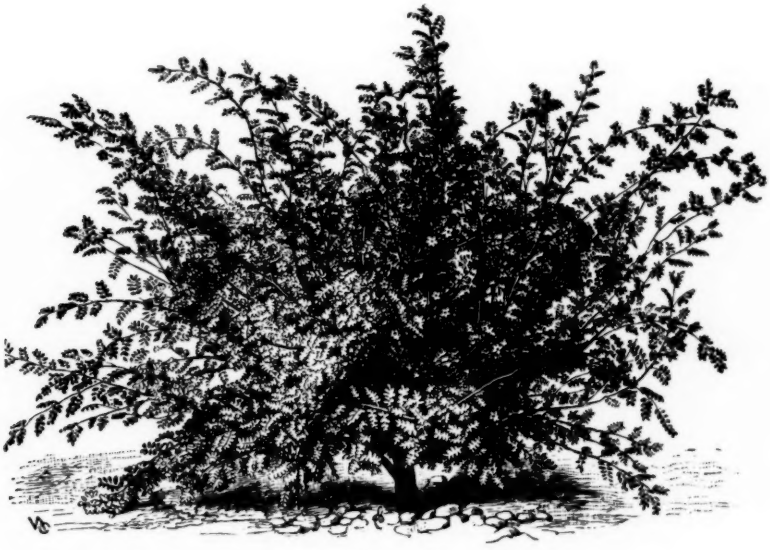
In the opinion of the present author, C. Boisii is a selection of the species C. arborescens characterized by long stout stipules and by a branched, spreading, rather low habit. Usually young stems and stipules are pigmented. The pod does not differ from that of C. arborescens in shape or size. The flat character sometimes attributed to the C. Boisii pod is probably caused by pressing specimens bearing soft, immature pods. Such a condition has been noted on some sheets.

Plants fitting the above description were selected from the variable seedling populations grown in this study. They occurred most frequently among the shrubs raised from seed obtained from Edin-

burgh. It was noted that the loss of young plants from winter killing was more frequent among this population than among the more typical plants of C. arborescens, which are of tall, ascending growth habit.

In the lower, spreading habit and in the character that the flowers are borne singly, or at least in smaller fascicles (1-2) than in most plants of C. arborescens (1-4), the taxon known as C. Boisii does approach the species C. microphylla. However, in a majority of characters (leaflets larger than 1 cm., texture membranous, flowers not over 2 cm. long, calyx not longer than wide, flower stalk not over 2 cm.) C. Boisii shows its closer relationship to C. arborescens.

The geographic range of plants of this phenotype has not been accurately determined. The plant from which the taxon was described was grown from seed collected in eastern Szechwan. Komarov, in his monograph of the genus (2), cites only one specimen, also from Szechwan. Specimens from the Gray Herbarium (GH) and from the U. S. National Museum (US) have been examined. Among these, in addition to plants raised in botanic gardens, were



Caragana microphylla, *var.* crasse aculeata.

Fig. 36. Original illustration of Caragana arborescens var. crasse-aculeata, from Vilmorin and Bois, Fruticetum Vilmorinianum, p. 57, "Caragana microphylla var. crasse aculeata."

Asiatic collections many of which fit this taxon in regard to stipule and leaf characters. All of these collections were made in Szechwan. Since it appears that plants of this character occur not infrequently in Szechwan Province it may be concluded that the taxon has a range generally on the southeastern margin of the range of C. arborescens.

The fact that plants of this taxon have obviously crossed readily with typical C. arborescens while in cultivation demonstrates their close relationship. Over the past ten years the author has attempted many interspecific crosses in this genus without success and is convinced that the distinct species are genetically well isolated. Artificial crosses between typical C. arborescens and "C. Boisii," however, have set seed readily. The evidence of ready hybridization between "C. Boisii" and C. arborescens indicates that the barrier between these taxa is certainly of a lower rank than is otherwise found between species of this genus.

Approximately 10 varieties of C. arborescens have been described by various authors. Most of these arose or were selected in cultivation and are treated as forms by Pojarkov in the Flora of the U.S.S.R. (3). Whether the entity "C. Boisii" should be regarded as a variety rather than as a form may be questioned. The segregation of the "C. Boisii" phenotype from a variable population would seem to show that the taxon is entitled to no more than the rank of form. However, the existence of a natural continuous distribution is considered to justify recognition of this taxon as a variety.

As has been noted, the original description of this plant was published under the name "Caragana microphylla Lamk. var. crasse aculeata." Although this varietal epithet is somewhat awkward, the present rules of botanical nomenclature provide that an epithet consisting of two or more words when originally published is not to be rejected, but, when used, must have these words united or hyphened. Regarded here as a variety of Caragana arborescens Lamarck, then, this taxon must bear the epithet crasseaculeata or crasse-aculeata, of which the latter seems preferable to avoid the juxtaposition of the two vowels.

Caragana arborescens Lamarck var. crasse-aculeata (Bois) stat. nov.

C. microphylla Lamarck var. crasse aculeata Bois in Vilmorin & Bois, Fruticetum Vilmorinianum, Catalogus Primarius 57, 1904.

C. Boisii Schneider, Illustriertes Handbuch der Laubholzkunde 2: 96, 1907.

Specimens seen: China, W. Szechwan: E. H. Wilson 2199, Sept. 1908, Tachun lu, 8-10,000 ft. (GH, US); E. H. Wilson 4375, Oct.

1910, Min Valley, Mao-chou to Singpan, 6-9,000 ft. (GH); Handel-Mazzetti 2465, May 21, 1914. In silva sicca subtropica supra vicum Helugo in convalle fluminis Yalung ad septentriones oppidi Yenyuen infra castellum Kwapi. (GH). Cultivated: C. Schneider 3688, 6-VI-06, des Barres, e Chine semis 971. (GH, probable clonotype); R. de Vilmorin, 30-6-27, Hort. Vilmorin, Verrieres. (GH).

The chief points of difference between the well-known related species C. microphylla Lamarck, C. arborescens Lamarck and the latter's variety crasse-aculeata are indicated in the following key.

1. Leaves 5-9 cm., leaflets to 1.5 x 2.5 cm. long; flowers borne in fascicles of 2-4, flower stalks 2-5 cm. long, corolla to 2 cm. long, calyx as long as broad.
   2. Habit erect, ascending, more than 2 m. (to 7 m.) tall. . . . C. arborescens
   2. Habit spreading, low, to 2 m. tall; stipules woody, 8-10 mm. long. . . . . C. arborescens var. crasse-aculeata
1. Leaves to 3 cm., leaflets 3-10 x 1-2 mm. long; flowers borne singly or sometimes in fascicles of 2, flower stalks 1.5-2 cm. long, corolla 2-2.5 cm. long, calyx longer than broad; habit spreading, low, to 1 m. tall. . . . . C. microphylla

Literature Cited

1. Bean, W. J. Trees and Shrubs Hardy in the British Isles, Vol. 1. London, 1950.
2. Komarov, V. L. "Prolegomena ad floras Chinae et Mongoliae. II. Generis Caraganae monographia." Acta Horti Petrop. 29(2): 177-388, 1908.
3. Pojarkov, A. I. Flora of the U.S.S.R. Vol. 11. Moscow and Leningrad, 1945.
4. Schneider, C. K. Illustriertes Handbuch der Laubholzkunde, Vol. 2. Jena, 1912 (pp. 1-112 published Mar. 15, 1907).
5. Vilmorin, M. L. de & Bois, D. Fruticetum Vilmorinianum, Catalogus Primarius. Paris. 1904.

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A set of the complete work was sold recently for $700. The collection offered here, of 175 plates plus 25 duplicate numbers, will be sold to the highest bidder whose offer above $40 (U.S.) is received by February 15, 1959. Interested persons are invited to send their mail bid to Dr. W. Powell, Librarian, Albert R. Mann Library, Cornell University, Ithaca, N. Y.

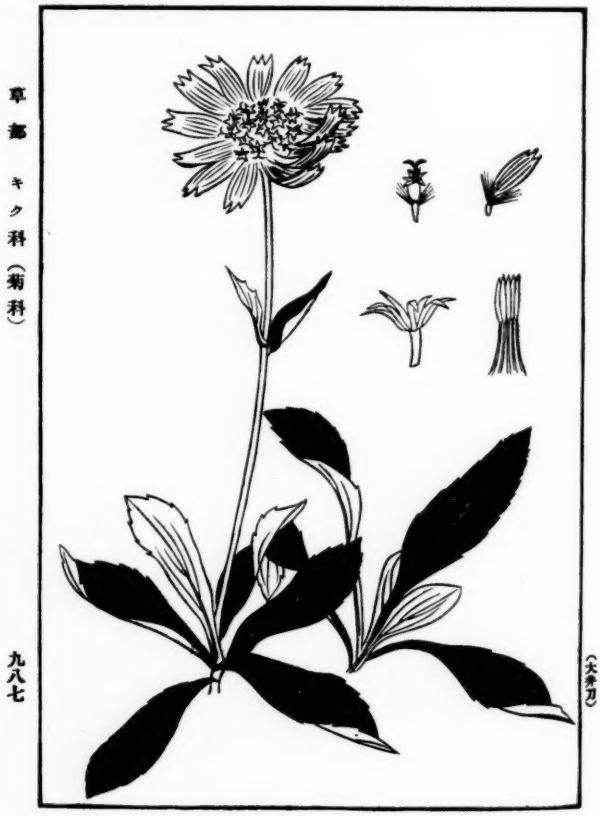

Fig. 37. Arnica unalaschcensis. From Iinuma and Makino, Somoku-Dsusetsu 4: 17 pl. 1, 1912.

Notes on the Cultivated Compositae
2. Arnica

William J. Dress

Though Arnica is circumboreal in distribution and there are over 30 species recognized, the genus itself is founded on A. montana, the only species occurring in Europe outside the Arctic Circle. Arnica is preponderantly an American genus in so far as number of species is concerned - of the 32 species recognized by Maguire in his monograph of the genus (Brittonia 4: 386-510, 1943), all but 2 are found native in North America, and 26 of these are endemic here. Four are both American and Eurasian.

The type species, A. montana mentioned above, was described by Linnaeus in his Species Plantarum (1753), though the species had been known in the European literature for at least two centuries before Linnaeus, going under such names as Alisma, Caltha, and Doronicum as well as Arnica. Linnaeus himself had described the two European species of Arnica with polynomials in Doronicum in his much earlier Flora Lapponica (1737). It is interesting to note that, of the six species of Arnica described by Linnaeus in the Species Plantarum, all but A. montana have since his time been transferred to other genera.

At least a dozen species of Arnica have in recent years been available through trade channels to horticulturists. Identification of the various species is usually not an easy matter for the non-taxonomist, and is none too easy in some instances even for a taxonomist who has not had much experience with the genus. It is not surprising, then, that material in cultivation is frequently grown or sold under incorrect names. Though the key below depends in some cases on rather technical characters, it should help in most instances to identify any arnicas to be found under cultivation, outside of botanical gardens and the gardens of wild flower specialists who collect their own material from the wild.

Key to Cultivated Species of Arnica

1. Anthers yellow; involucral bracts not callous-tipped.
   2. Pappus white or straw-colored, barbellate to subplumose; cauline leaves 3-4 (5) pairs.
      3. Heads hemispheric to campanulate; lvs. lanceolate to oblanceolate, sessile or with petioles shorter than the blades.
         4. Cauline leaves 3(2-4) pairs, old lf. bases without tufts of tan hairs in axils; involucre densely wooly or not. . . . . A. alpina

4. Cauline leaves 5(4-6) pairs, the old lf. bases with dense tufts of tan hairs in axils; involucres sparsely wooly. . . . . A. fulgens

3. Heads turbinate to campanulate; lvs. ovate or obovate, the lower ones with petioles equalling or exceeding the blades.

5. Achenes glabrate below the middle or entirely glabrous; involucre sparsely hairy and glandular; lvs. sessile or petioled. . . A. latifolia

5. Achenes uniformly short-hairy from base to apex; involucre densely white-pilose; lvs. with petioles equalling or exceeding the blades. . . . . A. cordifolia

2. Pappus straw-colored or tan, plumose or subplumose; cauline leaves 5-12 pairs.

6. Lvs. petiolate or sessile, usually not in a basal rosette, but if so, then petiolate.

7. Involucral bracts obtuse, sometimes acutish, the tips pilose within; rhizomes long, not rooting first year. . . . . A. Chamissonis

7. Involucral bracts acute, the tips not pilose within; rhizome shorter, conspicuously rooting first year.

8. Lvs. lanceolate, entire, sessile; rhizomes much branched, forming a close approximate crown; stems clumped. . A. longifolia

8. Lvs. ovate to lanceolate, serrate to denticulate, sessile or petiolate; rhizomes extensive, branched but not forming a close approximate crown; stems scattered.

9. Cauline lvs. 4-10 pairs, serrate-dentate; heads mostly 5-9, ca. 4 cm. across. . . . . A. amplexicaulis

9. Cauline lvs. 2-4 pairs, denticulate; heads usually only 1-3, ca. 5-8 cm. across. . . . . A. mollis

6. Lvs. sessile or subsessile, mostly disposed in a basal rosette. . . . . A. montana

1. Anthers purple; involucral bracts broadly callous-tipped.

10. Cauline lvs. 3-5 pairs.

11. Heads nodding; rhizomes naked; lvs. mostly basal. . . . . A. Lessingii

11. Heads erect; rhizomes densely clothed with fibrous leaf bases; lvs. not mostly basal. . . . . A. unalaschcensis

10. Cauline lvs. 10-20 pairs. . . . . A. sachalinensis

The species most frequently cultivated is the European A. montana, and part of its relative familiarity is due no doubt to the fact that it has been so long known to science and medicine, as well as to the European gardener. In fact, the name arnica is certainly better known generally as a medical preparation than as a plant, though, like many another medicine prepared from "herbs," it is no longer so familiar, used, or highly regarded as it once was. From the dried florets is prepared tincture of arnica, used chiefly in the treatment of bruises and sprains. The rhizomes, though once used, are no longer official. In the garden this is one of the more useful species, since it is relatively neat and compact in growth and has large showy flower-heads. The larger rock-garden

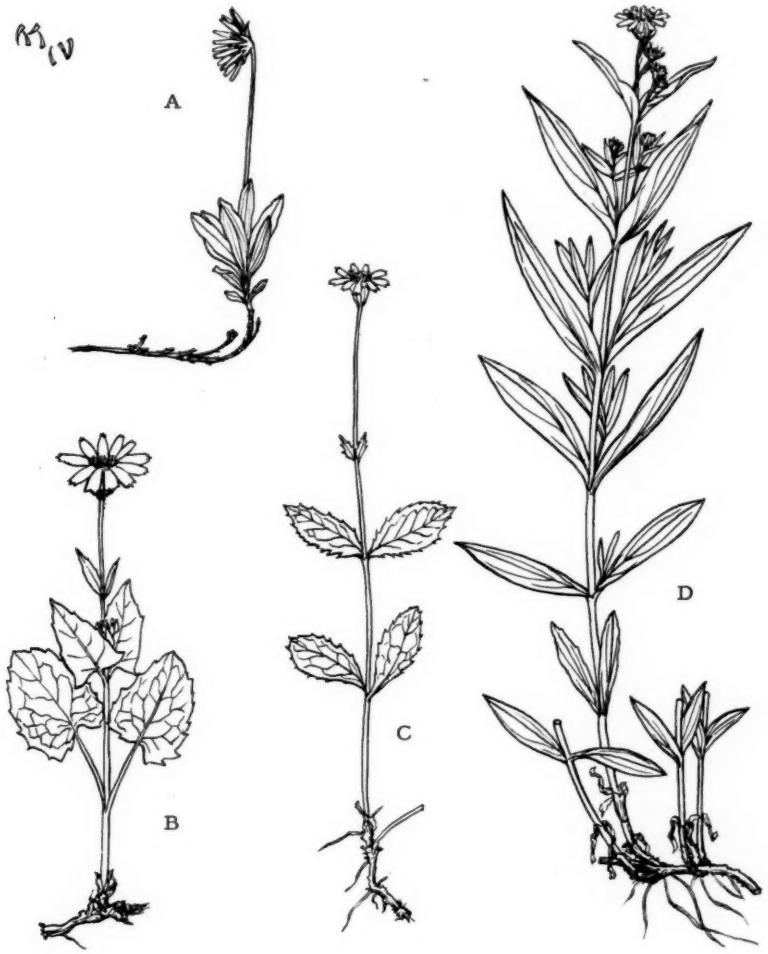

Fig. 38. A, Arnica Lessingii x 1/5. B, Arnica cordifolia, x 1/5. C, Arnica latifolia, x 1/5. D, Arnica longifolia, x 1/5.

or possibly the front of the border is the place for this. Its original home is the mountainous regions of central Europe and southern Scandinavia.

Arnica latifolia and especially A. cordifolia are very attractive plants in woodland gardens or the shaded rock garden. Both grow from 3 to 6 dm. high, have attractive ovate-cordate basal leaves and few stem leaves, and solitary or often three large (to 8 cm. across) erect heads of bright yellow florets. The longish rhizomes throw up solitary stems here and there, and a colony of either in a moist spot in light woodland is a lovely thing in spring when in bloom. Arnica betonicaefolia, which has been offered, is only a high alpine reduced form of A. latifolia which may not retain this smaller habit when grown under conditions different from those of the exposed mountain slopes on which it is found. Both species have about the same geographical range in western North America, from the Rocky Mountains to the Cascades and Sierra Nevadas, north to southern Alaska.

In the rock garden may be grown such species as A. alpina, A. fulgens, A. Lessingii, and A. unalaschcensis. Most of the others available are more suitable for the wild or woodland garden, since they are not so showy as A. montana, A. latifolia, and A. cordifolia, and are somewhat coarser than those mentioned as potentially useful in the rockery.

A finding-list of names in Arnica, likely to be found in horticultural literature and trade lists, is appended below. Valid names are underscored, others are not.

Arnica
- alpina (Linnaeus) Olin
- amplexicaulis Nuttall
- betonicaefolia Greene :: A. latifolia
- Chamissonis Lessing
- cordifolia Hooker
- foliosa Nuttall :: A. Chamissonis subspecies foliosa (Nuttall) Maguire
- fulgens Pursh
- latifolia Bongard
- Lessingii Greene
- longifolia D. C. Eaton
- mollis Hooker
- montana Linnaeus
- pedunculata Rydberg :: A. fulgens
- sachalinensis (Regel) Gray
- saluensis :: a listed name, perhaps in error for sachalinensis
- unalaschcensis Lessing

The Influence of the Horticultural Writings of Liberty Hyde Bailey[1]

Carol H. Woodward
Editor of Outdoor Books
The Macmillan Company

By the time a new printing of the Standard Cyclopedia of Horticulture is made early next year, more than 140,000 sets of this great work will have gone into circulation. Meanwhile, since 1930, copies of Hortus and of Hortus Second will have reached the desks of some 28,000 users.

If we add to these all the books written by Liberty Hyde Bailey, between the first Macmillan volume, The Horticulturist's Rule-Book, of 1885, and the last one, The Garden of Bellflowers, in 1953, the total is close to one million copies sold.

But to speak only of the books that Dr. Bailey wrote, even though they numbered more than 65, would be to belittle his accomplishment. He originated and developed series after series - Rural Life, Garden Craft, Open Country, Rural Science, Rural Text-Book, Rural Manual, and others - planning and editing them all, often rewriting them, and signing a few of these, too, with his own name. Of these books in series, 117 titles were issued by Macmillan. If these edited volumes are comparable in output to those he wrote, the total figures must exceed two and one-half million copies that have spread their influence among the people.

The impact of this amount of writing on a populace that was ripe for horticultural guidance toward the close of the last century has continued to be felt during 60 years and more of horticultural growth. And the person more responsible than any other for this growth was L. H. Bailey.

Up to the time that Dr. Bailey first began writing, there had been very few books of real practical value for gardeners. Three stand out: The American Flower Garden Directory by Hibbert & Buist, published in 1832; The American Flower Garden Companion by Sayers, in 1838; and The Flower Garden by Breck, 1851. The next books of value were Bailey's own.

All of the previous books had been written by nurserymen; none by scientists, as many are today; none by professional horticulturists outside of nurseries; none by specialists among the amateurs,

[1] An address delivered at Cornell University, March 14, 1958, on the occasion of the celebration of the Liberty Hyde Bailey Centennial.

To be pasted at bottom of vol. 6, page 199:
in line 2, for "140,000 sets" read "40,000 sets."

as occurred more frequently in England. Dr. Bailey was the first non-nurseryman in America to write authoritatively about plant culture.

Looking over a shelf of garden reference books today, we find the situation almost reversed. Was Bailey responsible for this shift? It is hard to say whether the change in type of authorship represents an influence or a tendency.

There can be no question, though, about the influence of Dr. Bailey's writings on today's gardeners and all associated with them. It is safe to say that nearly everyone concerned with any aspect of gardening is affected in some way by the books and by the philosophy of L. H. Bailey. If one reads a single newspaper column on growing annuals, for instance, one has felt the touch of Dr. Bailey, because there is scarcely a column or an article written that does not have, uncited, some reference from a Bailey book in its background. The half-dozen major gardening magazines in the U.S.A., the additional ones that carry garden articles regularly, and the nearly 1,000 others published by plant societies, garden clubs, and other horticultural organizations, plus the hundreds of newspaper columns on gardening, mean that the Bailey influence, through the reliable Bailey reference works, reaches out to a large portion of the population.

Dr. Bailey has made better gardeners of all of us, and has given those of us who use his books a broader understanding of garden plants and practices.

A lesser man would not have written so enduringly. But Dr. Bailey, revered as a leader among both horticulturists and botanists, was, in addition, a philosopher - and also a remarkably fine writer. In his scientific writing he opened up vast fields for research in subjects little understood at the end of the nineteenth century. Under the influence of his agile pen, as it reported his own reading and research, the stifled sciences of genetics, evolution, and plant pathology sprang into life. Plant physiology became important to gardeners, and taxonomy felt the influence of Bailey's thoroughness, his breadth of view, and his clarity of expression.

Bailey's development of new concepts for the botanical status of horticultural plants has given us such words as indigen and cultigen (since, with a slightly altered meaning, changed to cultivar). So much needed and so expressive are these words that in the span of part of a lifetime they have entered the language, not only of scientists, but also of horticultural writers.

Although scientific names of plants had been introduced in one previous book - Buist's The Family Kitchen Gardener of 1852 - Dr. Bailey was the first American writer to bring botanical accuracy

into horticultural literature. Furthermore, his editorial style was a model which over the years has remained the most acceptable one to follow.

The consistent clarity of his writing is amazing. It reveals his orderly mind, his grasp of each subject, and his understanding of the reader's needs. Even in plant descriptions, which in other hands are so often dull and unrevealing, he commands attention and creates a picture. So substantial was his work that, paragraph by paragraph, his horticultural writings are, in the main, as useful today as when they were published, some of them close to half a century ago. Names of many plants have been changed, and new plants (such as African violets and their relatives) have been introduced; some plants have gone out of fashion, and plant disease control has changed considerably. But anyone who follows the Cyclopedia today can, almost without exception, identify his plant and learn how to grow it satisfactorily.

This dependable character of Dr. Bailey's work has been an example and an incentive to many. In the production of new books on horticulture and related subjects, Dr. Bailey's lifelong publisher today is ever mindful of the criterion that he established before the start of this century. The quality that was intrinsic in his books has become the goal for their successors.

Americans have always had great respect for the sagacity of English gardeners. Yet, no writer among them in the past century or more has had that refined combination of botanical and horticultural knowledge that Bailey made his own. According to what English-trained gardeners have told me, Bailey's authority is recognized in their own homeland. In fact, the influence of this great American is felt around the world. Wherever a new school of agriculture or horticulture is being established, books by Bailey are the first ones to be acquired. A Bailey book is a bible to student, professor, and grower. Booksellers know this, and they always keep Bailey books in stock. One in India knows the Cyclopedia to be so important to some of his customers that he offers it to them on the installment plan. A dealer in Israel who, with a limited knowledge of English, at first declined to purchase the Cyclopedia, thinking that horticulture referred to horses, now is handling a good share of the more than 100 sets that are purchased in foreign countries every year.

This world-wide acceptance of the work of a single man is partly because Bailey's horticultural writing represents more than a background of technical knowledge. Supporting it firmly and enlivening it for all who read is the basic philosophy by which Dr. Bailey lived. He wrote of this philosophy in The Holy Earth and other books, and it revealed itself in his poems. It is a simple philosophy - of a profound love of the earth and of fellow men, of

belief in God, acceptance of the present, and a concern for the future which was chiefly expressed in his desire to work for the betterment of man, intellectually and esthetically, and particularly through the soil.

One may not discern a man's philosophy in a plant description, such as one finds on nearly every page of the Cyclopedia, but the very completeness, and helpfulness, and reliability of this and similarly organized works give evidence of the integrity of the man who conceived and directed them. And one can glimpse his attitude and see how close his heart lay to the soil in a remark like this, which I quote from The Principles of Vegetable Gardening of 1901. He is recommending sowing seeds of vegetables in rows, and he comments.

"The old practice of growing vegetables in beds usually entails more labor and expense than the crop is worth; and it has had the effect of driving more than one boy from the farm."

As one turns the pages of the books that Bailey wrote, one is constantly stopped by passages worthy of being quoted. His definitions are clear and pithy; they seem to point up the fine, distinguishing characters that others have overlooked. Even that guide of scholars, the Merriam-Webster Unabridged Dictionary, fails to be as discreet as Bailey in defining evergreen. In The Cultivated Evergreens of 1925 Bailey opens by saying that an evergreen is "a plant that holds its green foliage when dormant." This is what we all understand, horticulturally speaking; but others have not said it thus.

And very few texts on gardening have explained as reasonably as Bailey did in The Principles of Vegetable Gardening why one sows more seeds than are needed. He says, after speaking of thinning as a process of selection, "It is evident that the chances of securing the best are greater when the gardener leaves one plant out of ten rather than one plant out of three."

In his several nature-study books (of which nearly 30,000 went into use), the approach was also one of unusual appeal, aimed at ignoring the spectacular and pointing out, instead, "the commoner things of equal interest and greater educative value." While other books of instruction of that period were inclined to be either naive or didactic, Bailey's were straightforward and compelling. They are still good reading. His "Nature Study Idea" is more stimulating than almost any manuscript that has crossed my desk in the past five years, and its concept is not out of date.

The botanical text-books, a quarter-million strong, must have left their mark on that many students in the early years of this century, giving them a lifelong appreciation of the growing things of the earth.

A single reference will show what sort of influence Dr. Bailey could exert - and I am indebted to an article by Carol Aronovici for this example. It is a letter. "I have read your leaflet, 'The Soil and What It Is,'" wrote a Canadian farmer to Dr. Bailey, "and as I trudged up and down the furrows - every stone, every lump of earth, every sandy knoll, every sod hollow, had for me a new interest. The day passed, the work done, and I had had a rich experience."

Long before I became an editor of gardening books, I used to write articles on gardening for magazines whose editors didn't realize how little I knew. But I wanted to know the subject, so I went to the New York Public Library, and there I found abundant material. It was mostly magazine articles - in the Ladies' Home Journal and such - and almost all that were offered me were by Liberty Hyde Bailey. Who knows? Perhaps I would not be here today, were it not for that start that Dr. Bailey unwittingly gave me.

Eventually I joined the ranks of those who always go to a Bailey reference first, whenever horticultural information is wanted. The existence of such reliable books as these provides an inducement for horticultural writers, lecturers, and editors, as well as gardeners and teachers, to check their facts and names and terms, their plants and their procedures. Having a standard heightens the quality of the work of all who follow it.

If writers and others are serious in their horticultural pursuits, they will acquire more than reference material from their leading source. As an editor I have seen the evidence. They will sometimes sit in my office, talking of their work and their ambitions, and they will say with an inner glow, "I want to produce a work that will endure." Whether they give a reason or not, there is no doubt about the genesis of their determination.

If Liberty Hyde Bailey's long-enduring books had not been produced in his time, these horticultural writers of the present day might have found no torch to grasp. Perhaps the most important influence of all is Dr. Bailey's fine example and inspiration that have been passed on to others.

A History of the Genus Coccoloba in Cultivation

Richard A. Howard
The Arnold Arboretum

The genus Coccoloba is indigenous to the Western Hemisphere, occurring natively from Florida and the Bahamas through the tropics and south to Argentina. Over 400 species have been described in the genus but probably only 250 to 300 species will be recognized as valid. All are woody, varying in habit from trees to lianas. Within and without the natural range of the genus, only three species have been extensively cultivated as ornamental plants and, of these, only Coccoloba Uvifera appears to have successfully escaped from cultivation, and that only in the Hawaiian Islands. A larger number of species are currently under cultivation in greenhouses around the world and about a dozen species are maintained in botanic gardens and arboreta, mainly in tropical areas. One species, again Coccoloba Uvifera, is now recognized as adapted to pot culture and appears destined to be used as a house plant.

The ornamental qualities of Coccoloba species vary. One characteristic of the genus which contributes to its horticultural use is the development of extremely large leaves in seedling condition and in adventitious shoot condition, in contrast with the mature foliage. The unusual habit of the plant has been exploited also in the case of such species as C. Uvifera and C. pubescens. Frequently the young foliage may have an attractive bronze or reddish-purple color which is appealing, although this is generally soon lost as the leaves mature to a coriaceous texture. All of the species in cultivation are essentially evergreen. Generally the flowers are small and the plants are dioecious. Both the male and female flowers attract bees and in their native location many species are regarded as excellent honey plants. An attractive bright red color appears in the inflorescence of several species, but only one of these, C. rugosa, has been reported in cultivation. The fruit of Coccoloba is a triangular achene surrounded by a fleshy perianth. The genus has often been divided into sections, in one of which the fleshy perianth surrounding the achene consists mainly of the hypanthium and in another section, primarily of the perianth lobes. The fleshy fruiting perianth is often brightly colored. The heavy fruiting racemes of Coccoloba Uvifera are quite decorative, since a few fruits ripen

at a time, extending the period of color over several weeks. Coccoloba venosa has fruits in which the fleshy perianth consists primarily of the perianth lobes. The swelling of the achene frequently separates the white, immature perianth or the red mature lobes, producing a pleasant color contrast with the chestnut-brown-to-black achene seen inside. A few species develop straw-colored bracts below each flower and fruit and these bracts, again, afford a color contrast with the ripe fruit.

Two species of Coccoloba have been reported in cultivation since 1690. In that year Coccoloba pubescens was reportedly introduced into England by the Earl of Portland and in the same year C. Uvifera was brought to England by a Mr. Bentick. At various times a large number of explorers have introduced other species to greenhouse culture; however, only a relatively few of these plants survived over a long period. In the library of the Arnold Arboretum there are old catalogues and listings of the plants under cultivation in botanical gardens and in the greenhouses around the world. I have examined these catalogues and have prepared the following notes. The dates of introduction given are the earliest dates for a specific name discovered in this search. It is possible, however, that earlier dates may appear in less well-known catalogues. The names used in the following lists may all be considered "hort." or horticultural names. Where accurate determinations were possible, an author citation is given. In some cases, e.g., C. rugosa Desfontaines, the species was actually described originally from material in cultivation. Herbarium specimens of species under cultivation have been seen primarily in material on loan from the DeCandolle Herbarium in Geneva, the Botanical Institute, Academy of Sciences of the U.S.S.R. at Leningrad, and the Berlin Botanic Garden, and, less frequently, in other herbaria where the specimen bore a name followed by the annotation "hort." or "cult." or the specific spot of cultivation. Unfortunately, in many instances several currently recognized species are identified in cultivation by the same name. Little of the herbarium material of botanical garden origin can be identified accurately. The vast majority of it comprises adventitious shoots or sterile young branches with the atypical leaf of the younger stages of the plant development.

The species given below have been reported under cultivation in one or more botanical gardens. With the name under which the plant is listed, I have given the correct name, as far as that has been possible. Names cited with an authority are considered correctly identified. The oldest date of listing has been given along with the botanical garden for Europe, North America, Asia, and Africa. The critical notes which follow are based on personal observation of these species under cultivation in the Americas or in Europe. In a few cases it has not been possible to identify the specific botanic garden where the species has been cultivated. For

example, in Nomenclator Botanicus Hortensis by Gustav Heynhold (1840), a number of species are attributed to "European gardens." Contemporary lists of the period fail to report these plants in specific gardens, hence the report is credited to Heynhold.

The most recent complete monograph of the genus Coccoloba was published by Gustav Lindau in Engler's Botanische Jahrbücher 13:106-229, 1890. Several of Lindau's abbreviations for the origin of some cultivated specimens have not been decipherable, e.g., "hort. Monast., Par." and "hort. lips." Recently I have published a series of papers on the genus Coccoloba as it occurs in the West Indies. These appear in volumes 30, 37, 38, and 39 of the Journal of the Arnold Arboretum. Additional papers of this series and others considering species from Mexico, Central and South America will appear in future volumes of that periodical. Many of the species listed below are described or discussed in these papers.

Coccoloba acuminata Humboldt, Bonpland, & Kunth. Reportedly introduced into cultivation in 1824. First reported in Cambridge in 1831 and at Calcutta in 1861. An attractive plant with lanceolate or ovate-lanceolate mature leaves and colorful fruits. Apparently not currently cultivated, but a species of potential horticultural value in the tropics.

Coccoloba barbadensis hort. Reportedly introduced in 1790 and listed in cultivation at Kew in 1811. Coccoloba barbadensis Jacquin has been considered a West Indian plant, but is more properly referable to Mexico. Herbarium material bearing this name is more commonly Coccoloba Swartzii Meisner.

Coccoloba brasiliensis hort. Heynhold 1840.

Coccoloba caracasana Meisner. Kew 1899. Western Ceylon 1911. While this species has not been seen in current cultivation, the grayish-green orbicular and strongly-veined leaves, plus the strongly-bracted fruiting pedicels, make it an attractive plant.

Coccoloba chita hort. Although listed in cultivation at Buitenzorg (Catalogus Plantarum Horto Botanico Bogoriensi, p. 91.) in 1866, this name has never been published with a description or attributed to another species.

Coccoloba coronata hort. Most material so called can be referred to C. venosa Linnaeus.

Coccoloba crescentifolia Chamisso. A Brazilian species reported under cultivation in Trinidad in 1870.

Coccoloba crispata Buchanan-Hamilton. Cultivated under this name at Calcutta in 1845. Lindau refers this name to Polygonum chinense Linnaeus.

Fig. 39. Coccoloba diversifolia. From Jacquin, Selectarum Stirpium Historia Americanarum, pl. 76, 1763.

Coccoloba diversifolia hort. Cultivated in Paris in 1804. Most of the living material seen under this name, as well as older herbarium vouchers, is referred to Coccoloba Swartzii Meisner.

Coccoloba diversifolia Jacquin. A native tree of the Greater Antilles, the Bahamas, and southern Florida which is commonly offered by nurseries in southern Florida and appears frequently in horticultural plantings. The tree known as the pigeon plum is most commonly used as a street tree or a patio shade plant. Selected clones are occasionally available of only staminate plants or of plants having attractive bronze-colored juvenile foliage. Coccoloba diversifolia is a slow-growing tree with a dense globular crown.

The deep green color of the nearly evergreen foliage adds to its beauty. The fleshy fruits attract birds, but otherwise the tree is clean and suffers from no apparent pests. This plant is offered in many catalogues or is described in brochures under the names C. laurifolia, C. Curtisii, and C. floridana.

Coccoloba dubia hort. Cultivated at Ceylon in 1888 (Trimen, Hortus Zeylanicus, Royal Botanic Garden, Peradeniya, Ceylon, page 67, 1888). The name has not been published with a description and so cannot be identified.

Coccoloba emarginata hort. Reported by Heynhold in 1840. No material has been seen, but Coccoloba emarginata Jacquin is to be referred to Neomillspaughia emarginata (Gross) Blake, another member of the Polygonaceae.

Coccoloba excoriata hort. Reportedly introduced into cultivation before 1733, but first listed from Kew in 1789 and at Calcutta in 1845. Most material cultivated under this name should be referred to Coccoloba venosa Linnaeus, although C. excoriata Linnaeus is to be referred to synonymy of C. tenuifolia Linnaeus.

Coccoloba fagifolia hort. Cultivated at Paris in 1815.

Coccoloba ferruginea hort. Reported at Vienna in 1842. Although I have seen no material, Lindau referred this species from Endlicher's Catalogue to his concept of C. excoriata which is probably C. venosa Linnaeus.

Coccoloba flavescens hort. Reported by Heynhold in 1840. A distinctive species originally described by Jacquin, but not currently known by the author to be in cultivation.

Coccoloba floridana hort. See C. diversifolia Jacquin.

Coccoloba guatemalensis hort. Reported in cultivation at Amsterdam in 1857 and at Buitenzorg in 1866. Lindau refers undated herbarium specimens from plants cultivated in "hort. Monast., Par." to Coccoloba latifolia Lamarck.

Coccoloba guianensis hort. Reported at Trinidad in 1870. Coccoloba guianensis Meisner is considered a synonym of Coccoloba nitida H.B.K. The species occurs natively in Trinidad, but has little to recommend its use in horticulture.

Coccoloba Krugii Lindau. Introduced in 1932 from the Bahamas to the United States Department of Agriculture Plant Introduction Garden at Coconut Grove, Florida, where the plants are still alive.

Coccoloba latifolia Lamarck. Reportedly introduced into cultivation in 1812 and listed at Paris in 1815. A report of this species in the Natal Botanic Garden at Durban is dated 1889.

Coccoloba laurifolia hort. Cultivated at Berlin in 1809. Herbarium material proves to be seedling shoots of Coccoloba diversifolia Jacquin.

Coccoloba leoganensis hort. Mentioned in a list of plants cultivated at Schwetzingen in 1819. Coccoloba leoganensis Jacquin, long considered identical to or a variety of C. Uvifera, is now recognized as a valid species and the same as Coccoloba rotundifolia Meisner, which is a synonym. It is an attractive plant in the dry lands of Hispaniola and quite worthy of cultivation.

Coccoloba longifolia Fischer ex Lindau. Listed by Fischer as under cultivation in the Gorenki garden in Moscow in 1812. This is an extremely variable Jamaican species with little horticultural value.

Coccoloba macrophylla hort. A name invalidly used by Desfontaines for a plant later listed and described by him as Coccoloba rugosa, cited below.

Coccoloba majestica hort. Attributed to South America and cited in 1927 by J. Gillet in the "Catalogue des Plantes du Jardin d'Essais de la Mission de Kisantu (Congo Belge)," page 58. The species has never been described and no material is currently available for study.

Coccoloba microstachya hort. An acceptable species (C. microstachya Willdenow) if correctly identified. Reported in cultivation at Cambridge in 1845.

Coccoloba nitida hort. No specimens have been seen of the plant reported in cultivation at Paris in 1815.

Coccoloba nivea hort. Most living and herbarium material so identified can be referred to C. venosa Linnaeus, cited below, although some herbarium material of horticultural origin represents C. diversifolia Jacquin.

Coccoloba nymphaeifolia hort. Reported from Buitenzorg in 1866. Lindau refers material cultivated under this name as "hort. lips." to the species Coccoloba peltata Schott.

Coccoloba obovata hort. Reported by Heynhold in 1840. Identification is uncertain.

Coccoloba obtusifolia hort. Reportedly introduced to cultivation in 1823 and listed by Heynhold in 1840. No cultivated material of this species has been seen and positive identification is therefore lacking.

Coccoloba orbicularis hort. Reported by Heynhold in 1840. Lindau refers Coccoloba orbicularis Loddiges with a query to Muhlenbeckia orbicularis Loddiges. No material is available to make a positive identification.

Coccoloba peltata Schott. The earliest listing for this peltate-leaved Coccoloba is at Amsterdam in 1857. Several gardens in Europe still maintain this species in cultivation.

Coccoloba platyclada hort. Assigned by Lindau to synonymy of Muhlenbeckia platyclada (Ferdinand von Mueller) Lindau, but still frequently cultivated as a "Coccoloba." This is an Asiatic species reported under cultivation at Calcutta in 1861 and at the Krakow Botanic Garden in Poland in 1864.

Coccoloba pubescens Linnaeus. This West Indian species was introduced in 1690 and is currently in hothouse and outdoor cultivation in Europe, Asia, North America, and Africa. Earliest reports are from Kew in 1811 and Calcutta in 1845.

Coccoloba punctata hort. Herbarium material listed under this name is referable to C. venosa Linnaeus or C. diversifolia Jacquin.

Coccoloba pyrifolia Desfontaines. Reported frequently in European gardens as C. pirifolia hort. Described by Desfontaines on material cultivated at Paris in 1815.

Coccoloba rheifolia hort. Herbarium specimens of cultivated plants assigned to this species are to be referred to Coccoloba latifolia Lamarck or C. rugosa Desfontaines.

Coccoloba rugosa Desfontaines. Described by Desfontaines from material listed in cultivation in Paris in 1804. It was also cultivated at Buitenzorg in 1866.

Coccoloba sagittifolia hort. No material bearing this name has been seen. Lindau lists the name and refers it to Muhlenbeckia sagittifolia Meisner. The plant was reported in cultivation in Madrid by Ortega in 1798.

Coccoloba scandens hort. In a description of the Botanic Garden of Lyon published in 1954, Robert Douin lists this species (page 82), attributed to Forsyth. Bentham described Coccoloba excelsa (Hooker Journal Botany 4:624, 1845), and reported at that time, "In Forsyth's herbarium, I found, under the name of C. scandens, an imperfect specimen of a plant gathered by Anderson in St. Lucia...." I have seen that specimen and feel it is best referred to Coccoloba Dussii Lindau. The combination Coccoloba scandens has not previously been attributed to Forsyth and is not validly published by Douin. I have not seen the material and do not know what species is intended. Coccoloba Dussii is a rampant vine and would not be desirable in cultivation.

Coccoloba tenuifolia hort. Reported in cultivation at Southampton in 1817. Coccoloba tenuifolia Linnaeus is now recognized as a valid species occurring in Jamaica and the Bahamas. I have not seen material from cultivation, but since Captain William Bligh is

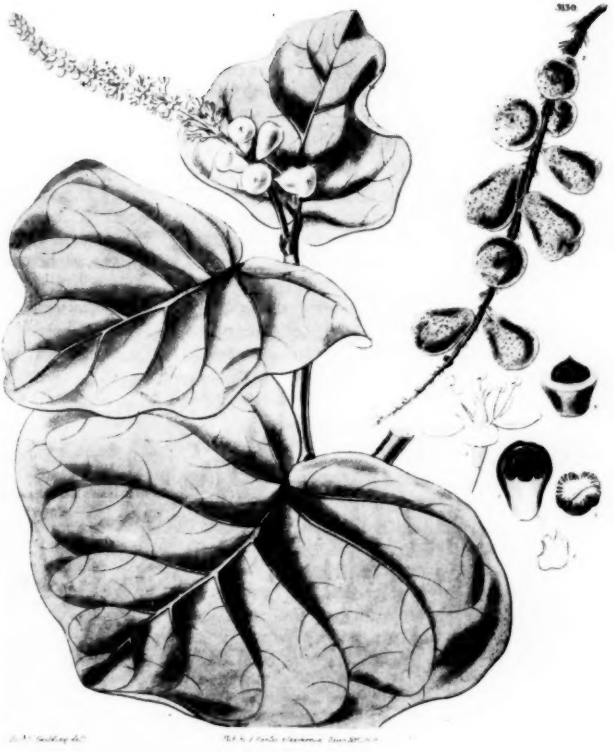

Fig. 40. Coccoloba Uvifera. From Curtis's Botanical Magazine 59: pl. 3130, 1832.

credited with the introduction of several species of Coccoloba from Jamaica to England, the horticultural name above may be properly applied.

Coccoloba Uvifera L. The common sea grape of the American tropics was reportedly introduced to Europe by Mr. Bentick in 1690. The earliest record for cultivation is that of the Leiden Botanic Garden in 1697. It is also reported from Calcutta in 1845.

The sea grape has already received much attention and use in landscaping and horticulture in the subtropics. The plants are

ideally suited for seaside plantings, being strand plants by nature. Unusual growth forms satisfy the most exotic requirements in design and the hardiness of the plant to withstand neglect or the minimum of care adds to its value. The sexes are on separate plants; thus, if fruits are desired, pistillate plants must be used. Occasionally male plants will produce full-sized but sterile fruits. The fertile fruits have an historic use for the manufacture of sea grape jelly.

Only recently has the value of Coccoloba Uvifera as a pot plant been realized. The seedlings of this species develop extensive tap root systems which must be heavily pruned in the early stages of cultivation. Above ground, the young shoot systems become wand-like unless pruned heavily to a bushy shape. Top growth can be slowed by allowing the root system to become potbound. The attractiveness of the pot plant is, of course, entirely in the foliage. The reddish-to-bronze color of the ochreae and the young leaves is followed by the glistening dark green of the orbicular leaves. As a house plant, the sea grape is remarkably free from insect pests and requires so little care as to place it in the category of Sansevieria and Aglaonema, both sturdy pot plants.

Although no horticultural variation has been described in the genus Coccoloba, my attention has recently been called to two color variants of Coccoloba Uvifera now being propagated. These originated from wild seedling lots and consist of variegated leaves lacking chlorophyll in segments and spots. A white and a yellow phase are recognized. It is not yet clear whether segmental mutations have occurred or whether a virus infection is involved. At any rate, this appears to be one more plant with variegated leaves destined to add color to tropical and subtropical horticulture.

Coccoloba venosa Linnaeus. A species commonly cultivated in greenhouses in temperate areas and out-of-doors in the tropic zones. The fruits retain their viability for a long period of time and germinate readily. The young plants are attractive, with short-petioled to subsessile, rugose but submembranaceous leaves. A fastigiate habit of the young shoots is common. The inflorescences are dense in flower and the straw-colored bracts augment the colorful fruits already described. Specimens of this species have been seen under cultivation and in the herbarium under the following names: Coccoloba coronata, C. excoriata, C. nivea, and C. punctata. The oldest record for cultivation appears as C. excoriata, reportedly introduced before 1733 but cultivated at Kew in 1789 and at Calcutta in 1845.

Coccoloba virens hort. Although this species was listed and illustrated in Edwards's Botanical Register (pl. 1816) and reported in cultivation by Heynhold in 1840, it cannot be accurately identified. No herbarium material from this plant has been seen.

Book Reviews

"The Amaryllis Manual," by Hamilton P. Traub. xiv × 338 pp., with colored frontispiece and 31 photographs and black-and-white drawings (the latter by Allianora Rosse). The Macmillan Company, New York, (July) 1958. $7.50.

Growers of amaryllis, indoors or out, will find this manual a most useful volume. Sixteen chapters, constituting the bulk of the book (231 pp.), are devoted chiefly to horticultural aspects of the genus for which the name Amaryllis rather than Hippeastrum is used. The reasons for this use are explained in Chapter One and are detailed in Appendix B. Dr. Traub has relied on his own extensive experience in growing amaryllis, and on the varied work of many others, to bring into one volume information that both amateur and professional growers require. There is a detailed description of a typical amaryllis plant - how it is constructed, how it grows, flowers, and reproduces. Culture, always a foremost consideration for growers of plants, is fully covered as are the problems of recognizing and controlling pests and diseases.

Methods of relatively recent origin for propagating clones vegetatively in quantity by means of bulb-scale and fractional scale-stem cuttings are described and illustrated, together with descriptions of propagation by seed and offset. The chapter on amaryllis breeding is designed so that the beginner may learn breeding techniques but may omit the more technical section on breeding principles and methods, though the latter would repay study.

The history of amaryllis in cultivation is traced in Chapter Four, which follows a chapter on wild species and precedes four chapters concerned with the various cultivated groups. One chapter is devoted to marketing, another to shows, including aids for judging. A last chapter suggests the use of amaryllis in the enrichment of education and daily living.

In addition to the horticultural portion of the book, a series of appendices separates technical information (A-C), provides a list of amaryllis organizations, nurseries, and dealers (D), as well as commercial sources for items mentioned in the text (E). A glossary of terms (Appendix F), bibliography, and index complete the book.

The reader whose concern is the horticultural aspect of amaryllis will not be disappointed in the text, which is complete in its coverage and usefully arranged. Illustrations include a frontispiece in color, a breeding chart showing the origin of two hybrid strains, eleven halftones, two drawings reproduced from "Herbertia" and seventeen (not twenty as stated on the dust jacket) drawings by Miss Allianora Rosse, most of which illustrate flowers of the various species and hybrids. These drawings, unfortunately, are over-

textured and not pleasing unless viewed at more-than-normal reading distance, nor is the delineation of floral parts, especially anthers and the important stigmas, as clear as might be expected in a book of this sort. It is difficult to see any fundamental difference in bulbs without and with a neck on page nine. The awkward terminology for flower parts illustrated on page ten has received little or no acceptance among botanists.

Three technical appendices (A-C) are written with the general reader as well as the scientist in mind. Appendix A is a short commentary on chromosome numbers with a catalogue of those now known. Appendix B - Nomenclature - is a somewhat restrained summary of a now rather voluminous and not always dispassionate literature relating to the reasons for applying the Linnaean generic name Amaryllis to the American genus long known as Hippeastrum, rather than to the Cape belladonna of South Africa. Many botanists and horticulturists, especially those of Europe and South Africa, do not support this conclusion. The committee of the International Botanical Congress which has studied the proposal for conservation of Hippeastrum has favored conservation, though this does not affect the problem of typifying Amaryllis Belladonna. Thus, until some concord is reached internationally, the problem of nomenclature continues to be a vexing one.

Though Dr. Traub adheres rigidly to the International Code of Botanical Nomenclature in Appendix B, he does not, regrettably, do so in Appendix C and in parts of the text. Since The Amaryllis Manual is advertised on the dust jacket as a definitive guide to the fabulous (sic) amaryllis, one would expect to place complete confidence in its content both horticulturally - and there seems no reason to question the horticultural chapters - and botanically. From the latter standpoint this manual cannot be considered definitive. If undue emphasis seems to be placed, in the following paragraphs, on what may seem to be minor matters of nomenclature, it is because names are, as it were, the reflection of taxonomy, and, among the horticultural public at least, they are almost of necessity accepted uncritically, their background is not understood, and they assume an importance out of proportion to their actual value as points of reference.

It is unfortunate, in view of Articles 40, 41, and 43 of the International Code of Nomenclature for Cultivated Plants (1952 and 1958), that the American Amaryllis Society has chosen to use the designation "Reginae strain" (p. 41) for a group of hybrids which apparently have not been derived from Amaryllis Reginae. It is doubly unfortunate that the names Amaryllis gh. reginioides (pp. 46, 73) and A. gh. leopoldioides (pp. 46, 74) have been used in the breeding chart, in the text, and earlier in "Herbertia" (Plant Life 10: 23-30, 1954), where two other similarly invalid names appear. Since these names are in Latin form they should have been accompanied by a Latin description to conform with Article 41, unless

such combinations have already appeared elsewhere (but no reference is given and they have not been located in the unindexed volumes of "Herbertia" or "Plant Life").

There is also inconsistency in the use of Amaryllis Belladonna var. Albertii (p. 61) and A. Belladonna var. plena forma Albertii (pp. 27, 88, 89). Judging from Appendix C (p. 283), the first combination has no standing (though the author has previously used A. Reginae var. Albertii), nor has a proper combination in the status of forma been traced for the second. These names are further complicated by the fact that this double form is assigned to Amaryllis Belladonna as var. plena (Herb.) Traub & Moldenke, Amaryll. 124, 1949, in Appendix C though the combination on the page of the earlier work cited reads A. Belladonna var. semiplena (Herb.) Traub & Moldenke. This last combination is quite correctly based on a legitimate name - Hippeastrum equestre var. semiplenum Herb. Thus, in effect, Dr. Traub has made a new combination on page 283 of the present manual based on a nomen nudum - Hippeastrum equestre var. plenum- which was earlier rejected by him and Moldenke. This double form is presumably one that has arisen in cultivation, so disposition of it as a cultivar would have avoided the difficulties noted.

In Appendix C there are further distressing indications that the International Code of Botanical Nomenclature has been either neglected, misunderstood, or ignored. The citation of authorities and references following the varietal epithet denoting the typical element of species which are composed of two or more varieties (A. elegans, and others) is in direct contravention of Article 26 of the botanical code which reads, "In the name of an infraspecific taxon which includes the nomenclatural type of the epithet of the next higher taxon, the epithet of this higher taxon must be repeated unaltered but, contrary to Article 46, without citation of an author's name...."

The combination A. elegans var. ambigua (Hook.) Traub & Moldenke cited from their Amaryllidaceae, 1949, would bear further investigation since it is based on Hippeastrum ambiguum Herb. (not Hooker) var. longiflorum Herb., a name in the varietal category which apparently should have been taken up (Articles 56, 60). The use of parenthetical authorities or double author citation, now required by Article 49 of the botanical code, is adhered to only in part.

The epithet Belladonna, noted on page 3 as Latin for "beautiful lady," is actually a vernacular name taken from the Italian. It may be noted also that some epithets derived from place names, such as maracasa, minasgerais, etc., do not conform with Recommendation 73D of the botanical code.

H.E.M., Jr.

"Spring Flora of the Dallas-Fort Worth Area, Texas," by Lloyd H. Shinners. vi + 514 pp., with 11 pp. of drawings and a map; loose-leaf, plastic binding, paper covers. Published by the author, Southern Methodist University Box 473, Dallas 5, Texas. $5.50 ($5.75 by mail).

Texas is not the only state still without a published flora accounting for and facilitating identification of all the vascular plants to be found growing spontaneously or "wild" within its borders, but the lack here is especially felt because no work of larger scope covers any appreciable part of its area, and because the number of species involved is so great. Such a comprehensive flora is still a thing of the dim future, though there have been published floras concerned with various small sections of the state, and a few parts of a projected Flora of Texas by C. L. Lundell and collaborators.

The flora under notice here "is largely an abstract of [Dr. Shinners'] Flora of North Central Texas, which after thirteen years' labor is still unfinished" though said by the author to be now about four-fifths completed. Written apparently with an eye to its usefulness as a tool in teaching a course in the flora of the Dallas-Fort Worth area, it is intended to cover wholly or largely 21 surrounding counties for their flowering plants of the first five months of the year. Though thus limited in scope, it is a welcome and will be a useful aid to those concerned with the native flora, but its special interest to readers of Baileya is its inclusion also of most cultivated woody (except coniferous) and many cultivated herbaceous plants of the region.

The systematic section of the work is arranged according to the familiar Engler system, with dichotomous keys to the families, genera, and species, with additional brief descriptive notes of most of them, together with habitats, distributions, and flowering seasons. Seventy-seven species are illustrated by simple but carefully drawn black-and-white figures. Additional textual material includes a short accounting of the new scientific names published in this work (including a new species each of Yucca, Rosa, and Desmodium), a glossary, index, and appendices comprising a summary of technical terms, use of keys, a discussion of scientific and common names (including notes on pronunciation of the former), instructions for preparing herbarium specimens, notes on the vegetation belts of the area covered, and a brief, interesting historical account of the plant-collectors who have worked in that part of Texas.

Printed by an offset process in large, easily readable type on large (8 1/2 × 11 in.) pages, and with a spiral binding that permits it to open flat, this book is very pleasant to use, though its size and weight make it a laboratory or "sit-down" tool and not a field manual.

W.J.D.

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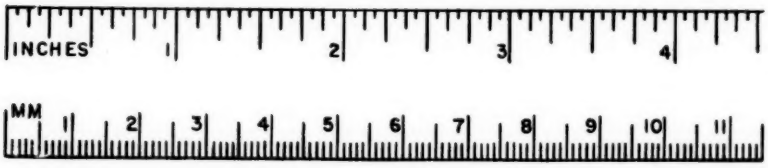
ABBREVIATIONS USED IN BAILEYA

ann.	annual	dm.	decimeter	lf.	leaf
bien.	biennial	fl.	flower	lft.	leaflet
br.	branch	fls.	flowers	lvs.	leaves
brt.	branchlet	flt.	floret	mm.	millimeter
caps.	capsule	fr.	fruit	per.	perennial
cl.	clone	ft.	foot	segm.	segment
cm.	centimeter	hort.	horticultural	st.	stem
cv.	cultivar	in.	inch	sts.	stems
diam.	diameter	infl.	inflorescence	var.	variety

METRIC - ENGLISH EQUIVALENTS (approximate)

6 mm. - 1/4 in.	10 cm. - 4 in.	10 mm. - 1 cm.
12 mm. - 1/2 in.	1 dm. - 4 in.	10 cm. - 1 dm.
25 mm. - 1 in.	3 dm. - 1 ft.	10 dm. - 1 meter
2.5 cm. - 1 in.	10 dm. - 1 yd.	
5 cm. - 2 in.	1 m. - 39 in.	



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